



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

CV. *Medical and Chemical Observations upon Antimony.* By John Huxham, M. D. F. R. S.

Read Dec. 5, 12, 19,
1754.

NOT above two centuries ago, a physician, who prescrib'd antimonials, was expelled the faculty; nay, at Rome, any one, who us'd Pulvis Cornachini, incurred the penalty of being sent to the gallies, on account of the antimonium diaphoreticum, that was in it. Now, on the contrary, antimony, in some form or other, is the grand catholicon, and us'd by dabblers, as well as doctors, in physick. It is without all doubt a most excellent mineral, when duly prepared, and judiciously administered.

But whoever would give antimonial medicines with safety and success, should be well acquainted with the analysis of that mineral, and its component principles; should know what different combinations, preparations, and doses of them, will affect: otherwise it may prove a poison, instead of a remedy. For who would imagine, without sufficient experience, that six or eight grains of the liver or regulus of antimony, and even a much less quantity of its glass, will cause the most violent vomitings; whereas a drachm or more of the crude, or common depurated antimony of the shops may be taken with ease and safety? But further, if equal quantities of antimony and salt-petre are deflagrated and melted together, a very strongly emetic liver of antimony is produced; and yet if three parts of that salt, and one of anti-
mony

mony are detonated and calcined in a proper fire, a mere inert calx, or antimonium diaphoreticum, as it is called, comes out, not in the least emetic or cathartic. On the other hand, if only one-eighth of nitre had been fused with the antimony, a very mild kind of regulus medicinalis had been the consequence. So likewise, if one part of salt of tartar is fluxed with five parts of crude antimony, a very gentle medicinal antimony, or, as more commonly called, regulus medicinalis, is prepared; and yet if two or three parts of fix'd alcali salt, and one of the same mineral, are melted together, a very drastic kind of hepar antimonii, and commonly a small quantity of regulus, ensue. Nay, antimony well roasted, calcin'd, and then flux'd into a glass, without the addition of any other body, becomes the most virulent emetic in nature: but if this very glass is only calcined again by the concentrated rays of the sun, through a large burning-glass, it is turned forthwith into an inactive calx, or a sort of antimonium diaphoreticum. The same is effected by burning the vitrum antimonii with about an equal quantity of nitre.

These are facts, which nothing but repeated experience could inform us of; and yet, however strange they may appear, perhaps, when we come more nearly to examine the matter, we may pretty clearly discover the reason of them.

The case seems to be thus: Clean, crude antimony consists of much sulphur, and a considerably greater quantity of reguline metallic parts. The sulphur, or at least what may be called the external sulphur, is little or nothing different from com-

mon sulphur, as Helmont surmised, and Boerhaave, Hoffman, and Geoffroy, have evidently proved ; and I think every one now allows it, however virulent the arsenical sulphur of antimony, as they called it, was deemed by the antient chemists. And this sulphur, like the common sulphur, is compounded of a vitriolic acid, and a bituminous or inflammable substance : and whatever Basil, Valentine, Charras, and others, talked of the vinegar of antimony, there is no other acid in it than what I have mentioned ; nor is there any kind of salt in antimony but the vitriolic acid, notwithstanding the conceit of Maets, Duncan Bornett, &c.

But however abundant the sulphureous principle is in antimony, the reguline greatly exceeds it, and in truth constitutes the very body or essence of antimony, and in which alone resides its drastic power, and emetic quality, as is sufficiently shewn by Monsieur Geoffroy, and of which, at present, I believe few chemists doubt ; for there is no one preparation of antimony emetic, in which the reguline principle doth not greatly abound : therefore no tincture of antimony, made with rectified spirit of wine, is in the least degree emetic.

This reguline substance, or antimony properly so called, is a metallic substance, *sui generis*, almost totally volatile when urged by a very strong fire, and can by no means, hitherto known, be brought to a malleable state. One will have it of a mercurial, another of an arsenical nature ; but it seems in several respects to differ from either. No pure running mercury can by any known method be drawn from regulus of antimony, or its flowers, with sal ammoniac,

niac, whatever may have been boasted by the alchymistical visionaries. The exceeding small quantity, that Monsieur Geoffroy fancied he extracted from it, could never be done again by the very same process, materials, and the utmost care. Besides, if the reguline part of antimony was really mercurial, how comes the mercury not to fly off intirely in a strong calcination, especially in such an intense heat as that of the burning-glass? And if it doth so, as some have asserted, how comes the remaining calx, after suffering such a violent action of the fire, to be so readily reduced to its pristine reguline metallic state, merely by the addition of any common phlogiston, as sulphur, charcoal-dust, animal fat, or the like? But indeed mercury in no form will stand such an intense heat, but is soon totally evaporated; and so would the regulus, if mercurial; the calx of which however, after having stood this fiery trial, is, as I said, easily revived into a proper regulus. Pure antimony differs from arsenic in not having the least garlick-smell, peculiar to arsenic when burnt. Nor is the antimonial regulus at all soluble in water, as arsenic, nor in oil of tartar *per deliquium*, in which however white arsenic almost intirely dissolves. Moreover the constituent particles of arsenic and antimony are of quite different figures; the former resembling two quadrilateral pyramids, join'd base to base; the latter like needles, as it were, and this particularly in the minutest divisions of antimony by solution, sublimation, &c. as is remarkably seen in the flowers of antimony *per se*, and in the solution of its regulus in wine, when viewed by a microscope on a slip of glass, or the like: nay, when stibium is

revived from the glass, or calx antimonii, it resumes the spiculine or needle-like appearance; and when mercurius vitæ is flux'd without any addition, it becomes a spiculine regulus, or a mere mass of such aculei, or needles.

Indeed it seems to be from this spiculine or needle-like form (which is constantly retained by the minutest particles of the reguline substance), that antimonial preparations have their emetic quality. Thus saline bodies stimulate by their points, or edges; sublimate corrosive by its salts actuated by the weight of the cohering mercury; arsenic by its rigid, sharp-pointed, heavy particles. For when these reguline spicula are sheath'd up in a large quantity of sulphur, as in the crude antimony, they exert no such power; and if regulus of antimony is melted up with pretty much sulphur, it becomes quite as inert as the crude mineral. So regulus, or glass of antimony, melted with wax, is rendered exceedingly much milder than before. Nay, even the virulent quality of the strongest white arsenic may be surprizingly taken off, by intimately uniting it with common sulphur by fusion.

It should seem then, that this sulphureous covering blunts or sheaths up the points of these acrid bodies, and takes off the irritation, which they would otherwise cause on the nervous coats of the stomach and guts. This is plainly seen in the glass of antimony with melted wax; which, though in itself the most violent of all emetics, thus becomes infinitely more gentle, and may be given to adults from four, six, or eight grains, to sixteen, with safety, and great advantage in some cases; whereas two or three grains of the powder'd glass will excite most dreadful vomitings.

ings. But let me add, by the way, that if the vitrum ceratum antimonii, after it hath been long made, is afresh rubbed to a fine powder, it proves much more drastic, the wax being rubbed off from it, and leaving its points more naked: so that even this seems to prove what I just now hinted. Hartman's chylista, or the old preparation of glass of antimony with gum-mastic, dissolved in spirit of wine, and then evaporating the spirit, seems to be on the same foundation, but, I should imagine, nothing near so safe: however, I never tried it, nor that other preparation of the vitrum antimonii, by the repeated deflagration of spirit of wine in it, which, Geoffroy says, may be given safely to ten or even twenty grains; the oleose part of the spirit of wine enveloping or blunting the stibiate spicula, and reducing the glass in some measure back again to its original antimonial state. 'Tis certain the saline-mercurial preparations are rendered much milder by burning spirit of wine upon them repeatedly.

The less therefore of the external sulphur adheres to the reguline part of antimony, the more vehement is its operation, and *vice versa*. Thus in preparing the common liver of antimony, the nitre deflagrates with, and carries off, a great part of the sulphur, whence the antimonial hepar becomes very strongly emetic (I do not consider at present what the alkalization of the nitre in the process doth further). And 'tis much the same in making the common regulus; and, when filings of steel are used in preparing the martial regulus, it is, that the iron may absorb the antimonial sulphur. So likewise, in calcining antimony for the glass, the sulphur is first driven

driven off by roasting, and then more perfectly by melting the residuum in a strong fire into a glass, whence it acquires a most violently emetic power, which notwithstanding is soon totally destroyed by re-melting it with much common sulphur.

But although this gross external sulphur is not at all necessary to the constitution of the reguline, metallic part, an internal or metallic sulphur appears absolutely requisite to the existence of the regulus, as regulus; for when antimony is quite deprived of all its sulphur, by what is called the humid or dry calcination, it ceases to be metallic or antimony. Thus antimony exposed to the strong concentrated rays of the sun, becomes an absolutely inert calx, or caput mortuum, and can never be reduced to its original nature and form, but by the addition of some sulphureous body. The same happens, when large quantities of nitre are deflagrated with antimony, till the sulphur is all burnt off, as in the common antimonium diaphoreticum. 'Tis thus also in the humid calcination, when strong spirit of vitriol is poured on the reguline mass, which it tears abroad, and lets loose the phlogiston; for this calx likewise is not reducible to regulus but by some sulphureous pabulum, in close contact and fusion with it. The strong sulphureous smell of the oil of vitriol, when forced off by distillation, or the like, discovers the phlogiston, and whence it came. Moreover this calx is intirely white, and will not in the least deflagrate with salt-petre; an argument of the absence of any sulphureous matter. This calx however is soon also turned into a regulus by the addition of a proper sulphur, and then deflagrates with nitre as usual.

It

It appears then, that some internal metallizing sulphur (perhaps however little or nothing different from the common external sulphur), is absolutely necessary to combine the metallic earth together, and even to give it the reguline consistence and form, without which it lies an inactive incoherent heap, utterly devoid of any antimonial virtue. Thus the dust, or minera, or ashes of iron, are harmless, and may be swallowed safely; but if formed into knives, or needles, the case is infinitely altered. We not only see the necessity of this internal sulphureous principle in the composition of antimony, but also in that of the more perfect metals, which, when calcin'd by the burning-glass (or otherwise) are not reducible into their proper metallic malleable state, but by the addition of some kind of sulphur, as a bond of union between the disjointed particles of the respective metallic earths. But it is pretty remarkable, that let the sulphur be animal, vegetable, or mineral, fat, coal-ash, or brimstone, it equally affects the coalition of the respective earths, and the regeneration of each of the different metals; so that it seems to be sulphur, as sulphur, that is only wanted in the recombination. In like manner as in vegetables, the conglutinating oil is necessary to the cohesion of the stamina, which being burnt off, they become a mere dust. It seems also to argue, that the difference of metals lies in their different specific metallic earths, as I may so call them, and not in the different proportion, combination, and purity of the sulphureous and mercurial principles, as Monsieur Hamberg, and others, have imagined. Also I know not how the sulphur, of the very same charcoal,
equally

equally serves to re-vivify the ashes not only of iron, copper, or tin, into their respective metallic forms and consistence, but likewise even the calx of silver or gold. But further, if these metallic earths were indeed originally of a mercurial nature, and remain so after calcination, how comes their mercury to stand such an immense heat as that of the burning-glass? whereas no known preparation of mercury, much less mercury itself, will stand a third part of the heat without being totally dissipated, and for this reason mercurials, as mercurials, never can be vitrified: but these earths, or ashes of metals, do stand this exceeding degree of heat, and are vitrifiable, and therefore not mercurial; and their calx may be reduced to metal again, by the addition of some sulphur: but I believe no one will say the charcoal, in the reduction, refunds the mercurial principle to them.

Possibly it may here be asked me, what indication there is of any remaining sulphur in well purified regulus of antimony, or its glass? I answer, no one can doubt of its being in the regulus, who knows, that the best antimonial regulus will deflagrate with nitre, in a red-hot crucible, and give off more or less of sulphureous scoræ; that flux'd with a fix'd alkali-salt, it will form a kind of hepar antimonii; and that sulphur may be easily separated from it, when dissolved in aqua regia. But this is obvious; the sulphur indeed is not so readily discovered in glass of antimony, but 'tis evidently there; for when that glass is finely powdered, levigated, and digested with very strong distilled vinegar, it tinges it very highly, and imparts to it an emetic quality: and this

this tincture, evaporated to an extract, gives off the sulphureous tincture to rectified spirit of wine : but, if this same glass is thus several times treated with fresh distilled vinegar, or its concentrated spirit, at length it neither gives it any tincture, or emetic power, but remains a dead, dark-coloured, inert mass, all the sulphur being extracted, and the glass reduced to a mere calx. Besides, even glass of antimony will in some measure deflagrate with nitre ; which shows, that it still retains some of the sulphureous principle ; and, in order to render it mild and innoxious, 'tis necessary to correct it by burning off the sulphur of the glass with nitre, or by the burning-glass : which is in truth the destruction of the metallic consistence in the glass.

But it is a much more difficult thing to prove the existence of the reguline spicula in the glass of antimony, in the very form of which I seem, in a great measure, to have placed its emetic quality ; and yet glass of antimony is the most violent of all its preparations. I confess, the spicula, or needles, by no means appear in the glass ; but they really do so, when the glass is digested, and dissolved in wine, by laying a drop of the liquor on a plate of glass, and then viewing it through a microscope. And further, vitrum antimonii, reduced to a regulus with a little common sulphur, appears of a needle-like striated form. And incinerated antimony, when melted with too slack a fire, often appears a mass of half-striated regulus, and half glass, so little is the difference. The salts in common glass do not appear, though they are unquestionably there, and sometimes so loosely combined with the vitrescible

earth, that wine, kept in glass-bottles, made of such ill-prepared vitreous matter, dissolves some of the salts, and thence the wine becomes ill-tasted and unwholesome. Moreover, the preparation of the vitrum ceratum antimonii seems not a little to confirm the reality of what I have hinted at; for the wax perhaps doth nothing but sheath up the pointed reguline particles, when melted with them: and this appears the more probable, as a large quantity of brimstone, melted with white arsenic, sheaths up the arsenical spicula, and renders them incomparably less noxious than before: so, with a due quantity of sulphur, glass of antimony itself is rendered a very mild kind of regulus.

'Tis exceeding difficult to explain the *modus operandi* of many medicines. Who can say, how a grain or two, of crude opium causes a profound sleep? or why a very small dose of cantharides so particularly and strongly affects the urinary passages? why two or three grains of elaterium operate with more violence than fifty or sixty of jalap? or why such a very small quantity of glass of antimony excites such dreadful vomitings?

But whether the emetic quality of antimony depends on the spiculine form, or not, it certainly lies only in the reguline substance; for not one of the preparations of that mineral is emetic, but when considerably impregnated with reguline particles; which, when not enveloped with too much sulphur, always exert a vomiting faculty; and this, whether given in substance, or dissolved in a proper menstruum, as wine, cyder, vinegar, or the like. Water, as water, draws nothing from an antimonial regulus,

as neither touching the sulphureous or metallic part. Spirit of wine hath no manner of effect on the reguline; but a vegetable saponaceous acid acts on both, and draws out the real substance of the regulus, making as it were a very attenuated liquid tartar emetic, or antimonial solution. And thus indeed the vegetable acids act on iron or copper; which neither pure water, nor pure spirit, will affect, but are most readily dissolved by wine, cyder, juice of lemons, or the like.

This leads me, however, to make the following observations: That though simple water is ineffectual in drawing off any thing emetic from pure regulus of antimony, yet certainly rain, or river-water, in some measure, acts on the body of crude antimony, and extracts from it a milky hue, and a sulphureous antimonial smell and taste, by being digested with it in a very gentle heat of the sun, or fire. And this water, by the way, so impregnated, hath been very often found of great service in cutaneous and other disorders, when drunk freely. Now, as the watery menstruum doth unquestionably take up some of the antimonial sulphur, it may receive therewith likewise some of the very fine reguline parts attached to the sulphur; just as almost all the natural sulphureous waters hold also something, more or less, of some other mineral principle, as particularly most of them something ferrugineous. And further, whatever may be thought of giving crude antimony in substance, Kunkel, Hoffman, Geoffroy, and many others, assert its great utility in several disorders; and, I think, I have sufficient reason to be of their opinion. It is scarce to be doubted, but that it is of

very great service in several of the diseases of horses, cattle, &c. and therefore we may very well suppose, that some of the reguline parts pass with the sulphureous into the mass of their blood; and, by parity of reason, antimony may as well find its way through the *Vasa lactea*, &c. of human bodies, and produce very salutary effects. I have, for a great many years, given antimony and quicksilver, rubbed into what I call an antimoniated æthiops, with great advantage, in several cases, particularly in cutaneous disorders, obstructed scrophulous glands, rheumatisms, &c. when the common æthiops had been found much less effectual. This I have long ordered to be kept here as an officinal medicine, and to be prepared of crude antimony, exceedingly fine powdered, p. iii; of pure quicksilver, p. iv; of flowers of sulphur, p. ii. These are to be rubbed into an impalpable black powder: Dose from ʒss. to ʒii.

It lies in my way here, also to mention, that though cinnabar of antimony, sublimed in the usual way after the butter of antimony, may be very little different in virtue, or composition, from the common factitious cinnabar; yet cinnabar of antimony, as now generally made, with æthiops mineral and crude antimony raised together, hath undoubtedly some of the reguline parts, as well as the sulphureous, of antimony, which carry them up; for it is well known to chemists, how easily the flowers of antimony rise in the common roasting, where the fire is much less than for subliming the cinnabar. Now, every one knows, that these flowers are of a reguline nature, are strongly emetic, and may be easily reduced to an actual regulus. The abundant sulphur
indeed

indeed wraps them well up in the cinnabarine preparation : however, I have often observed large doses of cinnabar of antimony create a nausea and puking, especially on tender stomachs. But then, for this very reason, this cinnabar of antimony may be, in many cases, much more effectual than the common factitious, or even than the native cinnabar.

But I come now particularly to make a few observations on some of the common antimonial preparations.

The common stibium, or crude antimony of the shops, hath been melted from its gross ore, into a sort of conical moulds, or vessels, like our melting-pots ; whence the molten mass, when taken out cold, somewhat resembles a sugar-loaf. Now, as in this melting, the more ponderous or metallic part subsides to the bottom, or narrow part of the pot, the lighter, or more sulphureous, remains above ; it is a matter of some importance in making the regulus antimonii, &c. from what part of the cone, or loaf, the antimony is taken ; for the nearer the point of the cone the more reguline ; and the yield, from a given quantity, thus taken, will be, *cæteris paribus*, much more considerable, than if taken near the base. This thing should be likewise attended to, when antimony is given in substance, or boiled, or infused in diet-drinks, in which it is far from being a useless ingredient.

I have before taken notice, that when the reguline part of antimony is involved in a great quantity of sulphur, as in crude antimony, that mineral exerts no emetic or drastic power : but when the antimony, by long roasting, or calcination, is depriv'd
of

of great part of this external sulphur, it acquires more and more of a vomiting quality, as the sulphur is more and more consumed. And when this incinerated antimony, as 'tis called, undergoes a further degree of fire, and is fluxed into a regulus, and even yet farther into a kind of glass, it is so far stripped of its sulphureous covering, that the reguline spicula lie as it were naked, and exert the utmost violence on the stomach, &c. . And even before it is turned into a proper regulus, or glass, it acquires, after a long and proper roasting, no small degree of an emetic power, as any one will find, who gives it in substance, or properly digested in wine, or cyder. And though I cannot say with Boerhaave, that it is violently emetic, yet I know Hoffman is mistaken, when he pronounces it quite inactive. This incinerated antimony then, being thus far deprived of its external sulphur by calcination, is farther divested of it by being kept fused a considerable time in a very strong fire, and converted into glass; which almost intirely consists of reguline parts, as is manifest from its being of a much greater specific gravity than crude antimony, or even than its hepar; and though the regulus lies concealed under a glassy form, yet it is still very easily reduced into a proper regulus, and therefore, as such, communicates a most strongly emetic quality to any menstruum, which the regulus itself would impart it to, as well as being in substance most violently vomitive. Nay, in running calcined antimony into glass, if the fire is not brisk, and well managed, part of the very same molten mass runs into regulus, and part into glass, so little is the difference between them.

Indeed,

Indeed regulus of antimony itself cannot be prepared but by destroying the external sulphur : for instance, eight parts of crude antimony, six parts of crude tartar, and three parts of pure nitre, made into a dry fine powder, must be thrown, by small spoonfuls at a time, into a red-hot crucible, whence a very great deflagration immediately succeeds each projection. At the bottom of the mass, first duly melted by a quick strong fire, the regulus is found sometimes more, sometimes less, as the fire, &c. are managed. 'Tis a necessary caution to force down the crusts, that are apt to form, at the beginning of the fusion, with an iron rod, or the like. Here a great part of the external antimonial sulphur is consumed by the deflagration, and the tartar and nitre being also forthwith alkalized by the fire, unite with the remaining sulphur, and so form a kind of hepar sulphuris, which dissolves, and takes up likewise, much of the reguline substance ; (for liver of sulphur, melted with any kind of metal, dissolves it, and even makes a mass soluble in water) ; so that by this process much the greater part of the antimony and salts is turned into a scoria, or a kind of crocus antimonii, on the top of the regulus ; and this especially if the fusion is long continued. The regulus, thus detached in a great measure from the sulphureous part, becomes very strongly emetic, for the reason above assigned. Though this is a common method of making regulus of antimony, at least in small quantities ; yet it is far from giving so large a portion of regulus, as may be had by several other processes ; for it consumes not only much of the sulphureous, but also of the reguline part, by the violent

lent and repeated deflagrations, which rise in the form of flame, fume, and flowers, if caught in proper places; and these last may be easily reduced to regulus again. Besides, the proportion of the salts is too great, for, being alcalized, and uniting with the sulphur, they take up too much of the reguline part, so as to leave very little at bottom, if a strong fire is long continued. Much more regulus, in proportion, would have been yielded, if the tartar and nitre had been previously fired, and turned into what is called the black flux. But, even in this case, the melted mass should be poured off, or taken from the fire, as soon almost as it flows very thin; else no small part will evaporate by the strength and duration of the fire, which also increase the proportion of the scoria. But a much greater quantity of regulus is produced by melting two parts of clean antimony with one part of iron-filings, or bits of nails, to which also one part almost of pure dry salt-petre should be projected. This process gives almost half regulus. Here the nitre in part likewise burns off the sulphur, but 'tis the iron, that chiefly takes up the sulphur, and unites with it into scoria; which, by-the-bye, finely powdered, and duly washed, may be used with as good or a better effect, than the antimonium martiale cachecticum of Ludovicus. I have repeatedly known it very serviceable in a leuco-phlegmatia, and an obstinate fluor albus.

If crude antimony is first calcined by fire, as for making the glass, or boiled repeatedly in fresh strong lime-water, much of the sulphur is carried off, and the stibium, thus managed, yields much more regulus in proportion than if crude antimony had

had been flux'd; but the salts, used in such case, should be very considerably less in quantity than in the common method, and also previously reduced to the black flux. Monsieur Geoffroy says, the incinerated antimony, melted with about an equal quantity of black soap, gives down much more regulus than is to be had by the methods of Kunkel, Stahl, or any other, even nine or ten ounces out of a pound: but I really never tried this method, not having at hand any true black soap: perhaps some other salino-sulphureous medium would do as well.

Upon the whole, however, this general observation may be made, that where only small quantities of ingredients in this, or any other assay, are fluxed at a time, there will be always less regulus in proportion, than if the process had been made with much larger quantities. Besides, in truth, there is a great deal of difference in antimony itself, some abounding with reguline parts much more than others: nay, antimony, from the very same loaf, differs in this considerably, according as it is taken from the basis or apex of the cone.

The effects of salts in antimony will more fully appear, if we attend to the operation of nitre in preparing the common liver of antimony; *viz.* if equal parts of antimony and nitre, finely powdered, and intimately mixed, are deflagrated, and melted in a crucible, or iron mortar, the product is a liver of antimony, which should be separated from the scoria. In this process the sulphur is first of all partly burnt off in the conflagration: and, 2dly, the remainder is eagerly imbibed by the nitre, now alcalized by the intense heat, which, by this means, also dissolves,

and intimately combines with, the reguline part, just as common hepar sulphuris dissolves and takes up all kinds of metals. That this chiefly depends on the alcalization of the nitre, and its consequent union with the antimonial sulphur, and thus forming a dissolving liver of sulphur, that combines with the metallic part of the antimony, is evident; for three parts of salt of tartar, or pot-ash, fluxed with two parts of antimony, produce exactly the same effect, that is a liver of antimony, without the least admixture or help of any nitre. And it is from the intimate union of so large a portion of this hepar sulphuris with the metallic part, that little or no regulus is deposited, but only an uniform half-vitrified substance at the bottom: nay, if it be not sufficiently fluxed, it gives off no scoria. However, if the pot-ash and antimony are quickly melted with a very brisk strong fire, a bit of regulus, sometimes more, sometimes less, is found at the bottom. But if a much less quantity of the alcalious salt is used, much less of the antimonial sulphur is taken up, and it so forms what is called by Margraaf, Hoffman, and others, regulus medicinalis, that exerts but little emetic power, there being sulphur enough left to envelope the reguline spicula. But when a much larger quantity of fixed alkali salts (as about two parts to one of antimony), is blended with it by fusion, so much of the sulphur is taken up by the salt, that little is left to sheath the reguline parts sufficiently to prevent their exerting a very drastic power. The liver of antimony, made in the usual way, with equal quantities of nitre, looses almost twice as much in the operation, by the deflagration,

as

as that with the fixed alkali; but the latter is not so glassy, and much more apt to relent by the moisture of the air. The crocus, however, from either, if perfectlyedulcorated, is nearly of the same strength. That indeed, prepared with half the quantity of nitre, is considerably weaker, as much less of the enveloping sulphur is consumed, especially where a strong fire is not used, and the matter is taken off before the scoria have well time to separate. Even the scoria of the common regulus of antimony are of the very same nature, and a kind of an hepar antimonii, which by a proper flux may be easily reduced in part to a regulus: so that whether alkalized saltpetre, pot-ash, or salt of tartar, are melted with this sulphureous mineral, a liver of antimony is produced, from which, duly washed, a crocus metallorum, or, more properly, antimonii. And as these hepatic masses are soluble in boiling water, the solutions let fall an antimonial sulphur, especially when precipitated with a vegetable or mineral acid: but this sulphur is always more or less impregnated with reguline particles, particularly that of the first precipitation, whence it is always considerably emetic. Nay, 'tis certain the reguline and sulphureous parts of antimony may be so incorporated with fix'd alkali-salts, that the whole, almost, of any quantity of antimony, melted with about an equal part of salt of tartar, or pot-ashes, may be thus turned into a kind of sulphur auratum, as 'tis called; which is itself, in truth, no other than a very sulphureous crocus antimonii. The cohesion however of the salt, sulphur, and regulus, in this hepatic concrete, is easily dissolved by pouring an acid to its solution in water,

which strongly attracting the alkaline salt, the sulphureous and reguline parts soon fall to the bottom. Nor are these latter very firmly united, as the alkalious salt did, during the flux, in some measure detach the antimonial sulphur from the reguline parts. It is evident the cohesion is but loose; otherwise so great a proportion of sulphur, as is found in the sulphur auratum, would, if very intimately combined with the reguline parts, have so sheathed up these spicula, as to render them incapable of impressing any great irritation on the coats of the stomach, &c. as is seen in crude antimony, and its regeneration from sulphur and regulus. Besides, though the first precipitation of the sulphur auratum is greatly impregnated with reguline parts, yet the second or third precipitation holds exceedingly few, and is almost entirely sulphureous, and scarce at all emetic. If you would have this milder, or more light sulphur, you should not pour on too much of the precipitating acid at first; or rather suffer the antimonial lixivium or solution to stand, for some days, exposed in a cold open air; for thus the impure reguline sulphur will fall of itself; after which you may instill the acid as usual; and, if you do thus, by gentle degrees, in small quantities, after the second or third precipitation, the sulphur will fall almost pure; which shews, that the sulphur in the hepatic solution is not very closely united with the regulus. By the way, however, as the antimonial lixivium, from the hepar, is so fully fraught with reguline particles, and these so much unsheathed, it is constantly more or less emetic, notwithstanding what Monsieur Lemery asserts to the contrary. But that is not the only exceptionable thing

thing in that gentleman's elaborate treatise on antimony.

As the sulphur auratum is now very frequently used in medicine, more exactness seems required in its preparation than is commonly practised: for certainly the first precipitation differs not a little from the subsequent, as being of a darker colour, and greater specific gravity, and of course more reguline. 'Tis also of some consequence how long the stibiate lixivium stands before the acid is poured on; for by time it will of itself drop much of the sulphureo-reguline substance; especially if it is kept in an atmosphere much impregnated with the fumes of vinegar, sulphur, or the like; and, in such case, the succeeding precipitate, with an acid, will be much milder, as being less metallic, but more sulphureous. The quantity and quality of the precipitating acid are also of consequence. Vinegar may rather augment the emetic power; and spirit of salt, or vitriol, may make a precipitate not altogether so proper to mix with calomel, as in Dr. Plummer's alterative pill, &c. Great care should be taken therefore in the ablution of the sulphur auratum; for the acid salts are not so easily washed off as some would imagine, and it cannot be doubted but that some of them fall with the precipitate. Who would think such a quantity of salts lay hid in the calx of silver, precipitated out of a solution of it in aqua fortis, by sea salt, which though perfectly washed, and altogether insipid (as is the luna cornea, into which it readily melts) yet two parts of this, intimately mixed with one part of regulus of antimony, and distilled, give a most caustic kind of but-

ter

ter of antimony. But however light and pure the antimonial sulphur may be desired, if it doth not in some degree participate of the regulus, it can have no more effect than common sulphur.

The kermes mineral, once altogether as much celebrated (and with as good reason), as any antimonial nostrum now-a-days, is also a kind of liver of antimony, and of the same nature with sulphur auratum, though the process in preparation seems very different. It is made by boiling crude antimony, powder'd, in a strong lixivium of fixed or alkali'd nitre (salt of tartar or pot-ash will do full as well). Here the alcalious salts fix on the sulphur, and unite with it; whence a liquid kind of hepar sulphuris, which dissolves, or perhaps more properly takes up, and incorporates with, many of the reguline parts: and thus in reality it becomes a mild sort of crocus antimonii, as is evident from its having some emetic power, and yielding a regulus by a proper flux.

There is another way of making a sort of kermes mineral, or sulphur auratum, seldom or ever practised, though I think really the best; and that is, by boiling crude antimony, finely powdered, in a very strong lime-water, for about an hour, and then precipitating the strained decoction with a solution of crude tartar, or its crystals, in boiling water. This decoction of crude antimony is as limpid as fountain-water, but gathers, by standing, a thin film, most beautifully variegated with all the colours of rainbow. However, this perfectly limpid liquor, on the affusion of a vegetable or mineral acid, immediately becomes turbid, and of a deep saffron-colour, and a great deal of an orange-coloured antimonial sulphur

fulphur precipitates, just as in the common way of precipitating the decoction of the scoria of the regulus, or hepar antimonii. Though this sulphur auratum, as well as the other, like the alchemistical gold, so much talked of, and expected, by the adepts, is much greater in prospect than reality; for when duly washed, separated, and dried, it scarce amounts to the fortieth part of what it seemed to be at the time of precipitation. I take this sulphur to be rather milder, and more fixed, than that from the scoria: however, here also is an abundance of reguline parts, as is evident from the orange-colour, and the emetic quality, which this also possesses. This decoction may as well be precipitated with juice of lemons or Seville oranges (which give the brightest-coloured precipitate); or by a solution of sal ammoniac, or fresh urine: even common saliva will do it; for, on taking a spoonful of this perfectly limpid decoction into my mouth, it in an instant turned intensely yellow: so that not only vegetable and mineral acids will precipitate this antimonial decoction, but likewise neutral salts.

This decoction of antimony in lime-water serves also to a further end; for the mineral, thus boiled, may be in a great measure deprived of its superficial sulphur, especially if boiled a second or third time in fresh strong lime-water. And then the powder, well washed and dried, is at fit for making regulus, or glass of antimony, as when the stibium is roasted and calcined in the common way. And perhaps antimony, thus prepared, may be more effectual in many cases, than the crude, when given internally:

it often pukes, and purges gently, if given to ten or fifteen grains, especially on the first use of it.

It appears then, from what hath been said above, that sulphur auratum, kermes mineral, Ruffel's powder, or Wilson's panacea of antimony without fire, are all of the same nature, though indeed somewhat different in their strength, and pretty uncertain in their operation; and therefore require a careful hand to prepare, and a good head to administer them with advantage. For the reguline principle will be much more predominant in the scoræ of the very same kind of regulus of antimony, if it is kept for a long time in a brisk fire, than it would be, if for a much shorter time; not to mention what I have said before, as to the manner of precipitating, &c. the sulphur auratum. And kermes mineral differs not a little, as prepared with a stronger or weaker lixivium, as more or less carefully washed andedulcorated, and as spirit of wine is, or is not, at last deflagrated with it. Whoever would give them, should begin with small doses, as a grain or two; but, as he finds they agree, may gradually increase to eight or ten, especially if they are intimately incorporated with any resinous extract, natural balsam, or the like. But the doses should by no means too quickly succeed one the other; for solid antimonials may lie a considerable time in the body without any sensible effect, and yet, at length, operate all on a sudden, with exceeding great violence; particularly when wine, cyder, or any vegetable acid, are swallowed upon them.

Though common salt, fluxed with antimony, seems to do little more than promote its fusion,
and

and therefore is commonly added, in small quantities, in preparing liver of antimony, and regulus medicinalis, yet its highly concentrated acid hath a very peculiar effect on the reguline substance, rendering it not only much more volatile, but likewise excessively caustic, as is seen in common butter or oil of antimony; for, in this preparation, the sublimate corrosive contributes nothing but its most highly dephlegmated and most penetrating acid salt, which the regulus more strongly attracts than the mercury; and these, uniting, form a most corrosive liquid, which comes over by distillation; from which is precipitated, by the affusion of common water, what is very improperly called mercurius vitæ, as it hath nothing of mercury in it but the name, and is, in truth, when dulyedulcorated with boiling water, a mere regulus antimonii, as plainly appears when it is melted. Though there are several other ways (and these too less dangerous) of making butter of antimony; yet this process with sublimate corrosive shews the regulus naked as it were, when precipitated, and the antimonial sulphur left behind with the mercury, which are easily sublimed into cinnabar: so that this also confirms the above doctrine; for with well purified regulus antimonii and sublimate corrosive no cinnabar can be prepared; there being no more sulphur in the regulus than is barely necessary to preserve the metallic form and constitution.

I have but seldom used mercurius vitæ in my practice, and that many years ago in some maniacal cases: it always proved a very churlish medicine, and I soon grew weary of it. If any one is inclined

to try any thing of this kind, I would recommend a preparation of the celebrated Dr. Stahl; *viz.* pour by little at a time, and slow degrees, near treble the quantity of good alcohol vini on rectified butter of antimony: as a considerable heat at first arises on the mixture, it immediately grows milky, and a very white gelatinous kind of mass soon precipitates. This digested for a day or two, in a very gentle heat, then sufficientlyedulcorated with boiling water, dried and deflagrated with spirit of wine, gives a powder much softer in operation than the common mercurius vitæ, though still emetic, and, as the Professor says, greatly sudorific and anodyne. The dose three or four grains. I find it sweats very largely, especially when it operates little by vomit, or stool, as indeed most of the drastic antimonials will do. Maets recommends another preparation of mercurius vitæ, under the title of purgans ex antimonio securissimum; which is made by melting one part of mercurius vitæ with two parts of nitre, and then well grinding this mass with an equal quantity of common salt. This done, let the salt be well washed off, and the mass welledulcorated. This indeed I find so secure a medicine, that it differs very little in virtue from common bezoar mineral: the reason will easily appear to any one, who considers the following observations:

Antimonium diaphoreticum, and ceruss of antimony, are little more than the dead ashes of that mineral, deprived of its internal or metallizing sulphur by repeated deflagrations with salt-petre; so that I think little can be expected from them in a medicinal way, both the one and the other being an inactive calx, in which the reguline form and con-
texture

texture are quite destroyed ; infomuch that aqua regia, which acts fo readily on crude antimony, or its regulus, will not touch thofe, much lefs diffolve them : an argument, that the metallic nature of the antimony is greatly destroyed in thefe preparations. And though they are both reducible, by a proper flux, to regulus again, yet never without the addition of fome phlogifton, or fulphureous fubftance. And thus indeed may any calx of antimony, prepared in the humid or dry way, be converted into regulus by fluxing in clofe veffels with fome inflammable ingredient : which fhews, that both the form and virtue of the regulus depend, in a great meafure, on the fulphureous principle, as well as the metallic earth. I know not whether it may be here worth noting by the way, that antimonial calx, reduced with mineral fulphur, takes a ftriated form ; but with an animal or vegetable phlogifton the luminous appearance of common regulus of antimony. Is this from the vitriolic acid only ? Mercurius vitæ, fluxed *per fe*, hath alfo this aculeated or needle-like appearance : whence ?

This likewife is really the cafe in the moft perfect metallic bodies, which loofe their metalleity, as Becher calls it, as malleability, and other metallic properties, by an intire deftruction of their internal metallic or combining fulphur, as is feen when metals are calcined by the burning-glafs, or an intense culinary fire. This internal fulphur is probably what Albertus Magnus means by the humidum unctuosum fubtile, which, he fays, is the prima materia metallorum, and is intirely analogous to the combining fulphur, or oil of vegetables, which binds the

very particles of the stamina, and organised parts together, and which, when totally burnt off, leaves the whole in ashes. But here, by the way, it seems evident, that the sulphureous pabulum, so necessary to the reduction of an antimonial calx, is very different from the very substance of light, or fire: for though a vast deal of the actual light, or fire, adheres to the calx, as is manifest from the great augmentation of weight in calcining regulus of antimony by the sun-beams, or a culinary fire, yet it by no means contributes to its metallic state; on the contrary it quite destroys it; and the sun-beams, or particles of fire, do not combine, but scatter, the reguline or metallic parts, by destroying the bond of union, the internal sulphur. In like manner oil of vitriol, or spirit of nitre, two concentrated and exceedingly fiery acids, tear abroad regulus of antimony, and reduce it to a calx, by letting loose the phlogiston, or sulphureous principle, whence the metallic substance is quite decomposed. And that this is the case, seems evident from the very strong sulphureous smell, that arises, when these acids are poured on antimony. Indeed oil of vitriol takes up the inflammable part of antimony, and unites with it into an actual mineral sulphur. It seems then, that these fiery acids act on antimony very nearly in the same manner as the sun-beams, or actual fire; and this is one argument, amongst many others, of the very great affinity between light and acids; which Sir Isaac Newton long ago hinted.

That the destruction of the internal sulphur of the reguline substance, in these calcinations, is the destruction of the reguline form, and of course of the

emetic power of the antimony, appears in part from what I have said above, and will be more manifest by attending to the following experiments. If merely equal quantities of antimony and nitre are deflagrated, and melted together, only so much of the external enveloping sulphur is consumed, as to leave the reguline spicula naked, and capable of very strongly irritating the coats of the stomach, &c. But if three parts of nitre are taken to one of antimony, by the repeated strong deflagration, not only the external but the internal sulphur also is totally dissipated, and the mass reduced to an inert calx. Thus likewise iron, tin, and copper, with a double or treble quantity of nitre, are reduced to ashes, and demetallized. A little more than two parts of pure nitre to one of regulus antimonii reduces it to an innoxious calx, as there is much less sulphur to be burnt off in the regulus than in the crude antimony: and about an equal quantity of salt-petre quite destroys the virulence of glass of antimony, as in it there remained only just sulphur enough to preserve the reguline nature. So five parts of nitre to two of mercurius vitæ convert it into an active substance, or kind of bezoar mineral. But of this enough—What nitre doth by deflagration, the burning-glass doth by the intense force of the concentrated sun-beams; by which antimony, its regulus, and glass, are turned to a mere calx, the whole of the sulphur being quite burnt up. Nay, when any of these are a long time exposed to the action even of a common strong fire, they are reduced to mere ashes, which can neither be run into regulus or glass again, but by the help of some phlogiston, as animal, vegetable, or mineral sulphur.

And

And the same is necessary to the reduction of the calx of iron, tin, copper, &c. That there remains no sulphur in any antimonial calx, so prepared, is manifest, in that no one of them will deflagrate with nitre, nor be reduced to a reguline state, without adding some phlogiston. That the reguline nature and contexture are destroyed in these preparations, appears in that they are not at all acted upon by aqua regia, which so perfectly and readily dissolves any antimonial regulus: and hence also they are utterly devoid of an emetic quality.

But in all these calcinations with nitre, three parts at least of that salt must be used to one of the crude antimony, or the internal sulphur will not be sufficiently burnt off, and the reguline spicula so far destroyed as to leave an inert calx: for if two parts only of salt-petre are employed, it proves still emetic, as is seen in what Boerhaave calls *antimonii emeticum mitius*: so also if the nitre be considerably reduced, in the preparation of the ceruss of antimony, that likewise will remain very drastic. If equal quantities of nitre and glass of antimony are exposed for some time, in a clean crucible, to a brisk fire, a very beautiful calx, or diaphoretic antimony, comes out, but altogether inactive: if two-thirds however, or half only, of nitre is used, the calx is nothing so white (the sulphur not being quite burnt off); and thence it remains still emetic, especially if only half salt-petre is projected with the antimony.

Upon this foundation may be made several sorts of antimonial powders, more or less active, as more or less nitre is used; which, prepared with care, and given with judgment, may prove of considerable service

service in medicine, much more so surely than the common antimonium diaphoreticum, or cerufs of antimony.

But, in all these calcinations, not only the quantity, but the quality also, of the salt-petre should be well considered; for some nitre greatly abounds with common salt, and hence less corrects, as it is called, or rather destroys, the regulus.

But I greatly prefer the infusion of the glass, regulus, or crocus of antimony, in sound generous wine, to any other preparation of that mineral, as by far the most certain, safe, and effectual; and the vinum antimoniale made with the glass, or regulus, I think the best: for unless the liver of antimony is carefully prepared with a due quantity of nitre, and a proper degree of fire, it cannot be depended on, as being sometimes stronger, sometimes weaker, and sometimes it throws up no separable scoriæ; which makes it, *cæteris paribus*, considerably weaker. Besides, the hepar should be finely powdered, and well edulcorated with repeated ablutions (or rather decoctions) in hot water; otherwise much of the alcalized nitre will adhere to the hepatic crocus, and enervate the power of the vinous menstruum. This was not formerly attended to so much as it ought to have been; and I well remember, when the vinum benedictum, as then called, was strangely different the one from the other. Certainly, when prepared with true glass of antimony, or pure regulus, there is not this uncertainty. If the martial regulus is used, it may in some small degree also participate of a ferrugineous principle. The wine should be always carefully filtered, after sufficient infusion. In this
infusion

infusion of the glass or regulus of antimony on wine, the reguline substance is dissolved by that saponaceous spirituous, tartareous menstruum, and the reguline part becomes most highly attenuated; otherwise it would not so readily pass with the wine through the closest filtre, and remain so long suspended, and intimately incorporated with the wine, and so remain for years together. So that antimony, so prepared, is in solutis principiis, as it were; or rather is thus rendered a kind of highly subtilized liquid tartar emetic, which possesses the whole power and virtue of stibium, as it is potent enough to give a very strong irritation to the stomach and intestines, if taken to the quantity of an ounce or two; and yet, in a smaller dose of two or three drachms, it only causes a nausea, gentle puke, and a stool or two, if neither a sweat, or very high perspiration: but, from thirty to sixty or eighty drops, it generally proves merely an alterative and diaphoretic, passing through the inmost recesses, and ultimate ramifications, of the whole vascular system, with little or no disturbance to nature, and yet evidently promotes all the animal secretions and excretions, particularly those of the skin, intestines, urinary passages, and salival ducts, by gently irritating the whole nervous and vascular compages.

As this antimonial wine then so readily mixes with the blood and animal humours, and passes off so freely and easily through all the outlets of the body, it may be given with safety, and repeated with success, two, three, or even four times in twenty-four hours, in small doses, and so continued for days together: whereas the solid antimonial preparations
are

are very uncertain in their operation, sometimes lying a long time in the stomach and bowels before they exert any sensible effect; and then, at once, irritating with so much violence and obstinacy, that the patient is too often quite exhausted before the force of the antimonial. And this is not a little to be feared, and sometimes actually happens, when kermes mineral, sulphur auratum, crocus antimonii mitior, and even regulus medicinalis, and other stibiate powders, or pills, are given, and too soon and frequently repeated, as every one must know, who hath freely dealt in such sort of medicines; a hypercatharsis sometimes, all at once, and unexpectedly, coming on, especially on drinking a glass of wine, cyder, or other vegetable acids.

Besides, when antimonials are given in substance, they must first undergo a dissolution in the stomach, before they can pass the lacteals, and be mixed with the blood, so as to act as alteratives, diaphoretics, &c. Now, in this liquid preparation the reguline part is already dissolved, and most exquisitely attenuated, so that it passes into the blood with the utmost facility. It should be moreover observed, that, in this form, antimony may be given in the most agreeable manner, without even being perceived, or creating any more distaste than the wine it was made on. A thing of some consequence truly, when we have to do with squeamish patients, particularly with children, to whom it may be necessary to give repeated doses of the medicine. It is certainly then much in favour of this preparation, that it is so agreeable, and may be so easily concealed, and given in any proper liquor; and this, I say, to children, as well as grown persons.

There is many times the strongest indication for puking and purging them, and yet it is extremely difficult to give them the common medicines usual on such occasions; whereas the antimonial wine may be given in their common drink with the utmost ease and safety. I have very frequently given it with success, from ten to thirty drops, to children of a year or two old, in the chin-cough, and asthmatic oppressions, when an attempt to force down more nauseous medicines had endangered a suffocation and convulsions.

Should it be imagined, that this medicine, being so safe and easy, can have no great efficacy as an alterative and diaphoretic; I answer, that as it is capable, in a proper dose, of irritating the stomach and intestines so strongly, it cannot be supposed, even in very small doses, to lie inactive in the sanguineous and lymphatic arteries; and both seems, and eventually is, exceedingly well adapted to stimulate and scour the whole vascular system. In confirmation of this, we find, that when a pretty large dose of the essence of antimony is given, as three or four drachms, for instance, a large sweat almost always succeeds, if it is not immediately thrown up by vomit. By thus keeping up then, and quickening, the action of the vessels on the contained fluids, the general circulation of the humours is most effectually promoted; and indeed some such a stimulus is very often highly necessary in the ultimate ramifications of the sanguineous, serous, and lymphatic arteries, where the motion is naturally exceeding slow, and where stagnation, and consequent corruption of the serum and lymph, are very apt to generate a putrid colluvies.

colluvies. I think one of the uses of salts of all kinds, especially of common salt, is to act as a general stimulus; and hence the moderate use of it is so salutary. By thus universally stimulating therefore not only the greatest, but also the smallest vessels of the body, this medicine greatly tends to remove all obstructions formed, or forming, even in the minutest canals; and hence most successfully promotes the natural secretions and excretions; in which, duly performed, health itself consists.

In obstinate rheumatisms then, in cold scorbutic affections, in most cutaneous diseases, in asthmatic, leucophlegmatic, and icteric disorders, in old stubborn head-aches, vertigo, epilepsy, and mania, antimonials are very useful, and the vinum antimoniale in particular. In my own practice I have had numerous instances of its success in the above cases, and have likewise had the pleasure of finding it successfully used by several eminent practitioners.

Let me further add, before I quit the subject, that I very frequently give this antimonial wine, or essence of antimony, as I call it, in some acute as well as chronic disorders, and particularly in slow fevers, low irregular intermittents and remittents, in catarrhal fevers, in a peripneumonia notha, and even in a true peripneumony, after proper evacuations, towards the close, when the spitting is prematurely suppressed, and great anxiety and difficulty of breathing come on. In like circumstances, it is very proper in the small-pox also; and I have had the satisfaction, through divine goodness, of seeing it many times very happily succeed in many desperate cases; the expectoration returning sometimes with a gentle

vomiting, sometimes a stool or two, and sometimes a universal kindly sweat. The kermes mineral was formerly given in such cases with astonishing success, and operated much in the same manner: however, I well know the essence of antimony is much more safe and certain; though the powder had a surprising reputation in France and Germany, about thirty or forty years ago, and with justice too, when properly timed and dosed; but the too precipitate and injudicious use of it soon brought it into disrepute. And this is generally the fate of all empirical medicines, which are cried up as good in all cases, and at all times; for, though they may be really good in themselves, under a proper administration, yet the indiscriminate and imprudent use of them too often renders them poisons instead of antidotes; as hath, in truth, been the case with some more modern arcana.

To conclude, I do not pretend that the observations I have here laid down are altogether new; I allow that far the greater part of them are commonly known, and as such I produce them, without particular quotations from particular authors, or setting down processes at large, which may be easily consulted in the common books of chemistry; knowing also that there are several other ways of working, in the great way, much more commodious and cheap, by saving salt-petre, &c. But, if I mistake not, I have, in some measure, given a new light into the nature of stibium; at least have made it more obvious to the younger part of such, whose business it is to prepare and exhibit antimonials, than they will readily find in any one single treatise. And, as stibiate medicines are now so much in vogue, this little piece
may

may not be an improper thing to be put into the hands of students in physic: perhaps it may excite even some of the more experienced to improve and ascertain the virtues and doses of antimonials, which at present are not a little undetermined.

Besides, I had also a further view in drawing it up, which is to recommend the use of what I have called essence of antimony, or the *vinum antimoniales* (for the aromatic in it is of no great importance), as much the most safe and useful preparation thereof. I have used a great variety of antimonial medicines for near thirty years; and must say, from sufficient experience, I greatly prefer this to any other, though I am far from condemning all the solid preparations of antimony; but I assert no one of them hath greater or better effects in medicine than this; and very few, if any, can be given with equal safety. I think I may say of many of them, in the words of Celsus, "*His varie medici utuntur, ut magis, quid quisque persuaferit sibi, appareat, quam quid evidenter compererit.*"

But, after all, it is not this or that medicine, or preparation, will cure a disease, unless prudently made use of. A man may as perfectly well know how to make a hatchet, a hammer, or a saw, as a chemist how to make such or such particular medicines; and yet the first may be as far from being a good carpenter, as the second from being a good physician: the arcanum is how to use them.